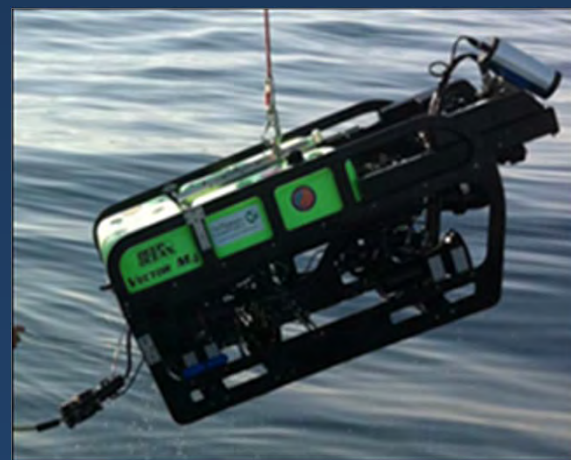
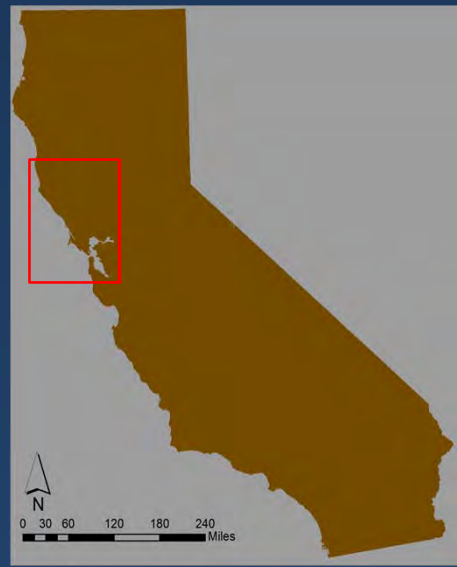


# Gender-mediated habitat associations of Kelp Greenlings within the North Central Coast of California

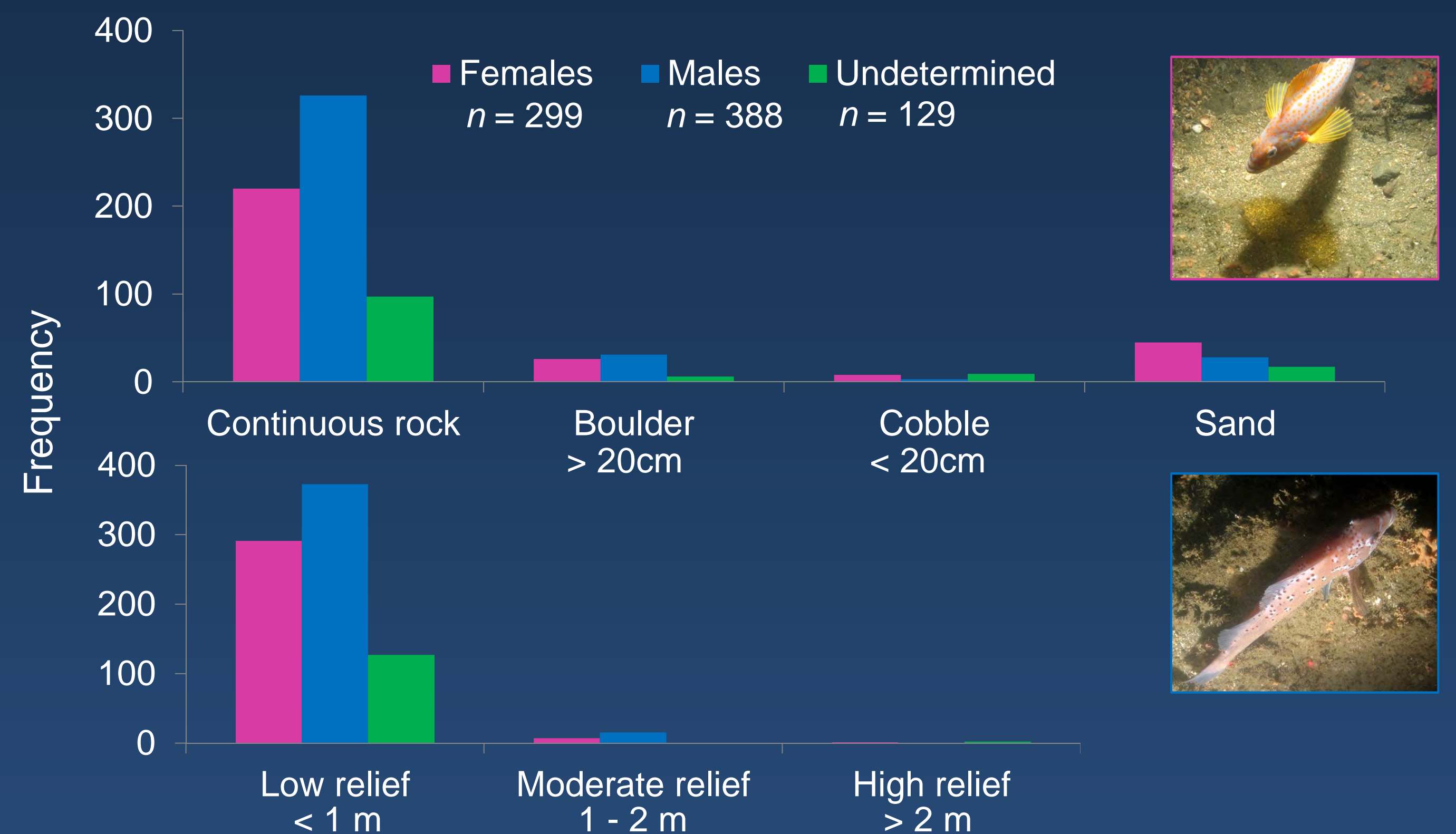
Moye, J.\*, Lindholm J.B.  
Institute for Applied Marine Ecology, CSU Monterey Bay

**Understanding the distribution of ecologically and economically important fishes help us use and manage our resources more efficiently. One way to understand distribution is through observation.**

In 2010 and 2011 the ROV *Beagle* collected 125+ hours of video and 12,900+ photographs in the North Central Coast (NCC) region of California. From this imagery, fine-scale habitat associations of 816 Kelp Greenlings were quantified.

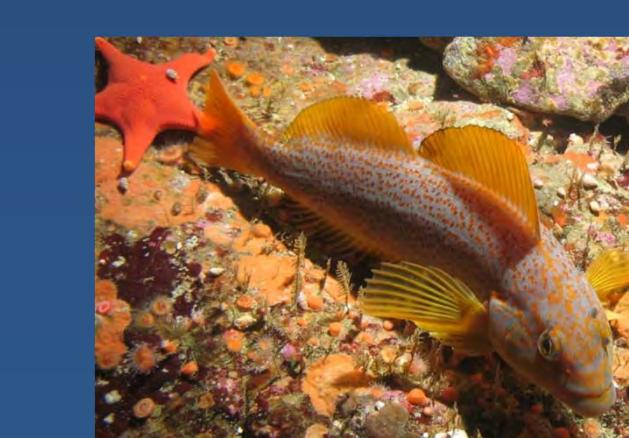


The majority of Kelp Greenlings were observed over continuous, low relief rock substrate across all study sites, regardless of gender.



## Fine-scale habitat associations of Kelp Greenlings provided the basis for geospatial analysis.

Based on habitats from observed Kelp Greenling associations, 3 models were constructed for the Bodega Head study site (females, males, and all Kelp Greenlings). Environmental predictor variables were derived from high-resolution (2 m) bathymetry data. These models provided insight into larger-scale habitat associations.



All Kelp Greenling Presence



Female Kelp Greenling Presence

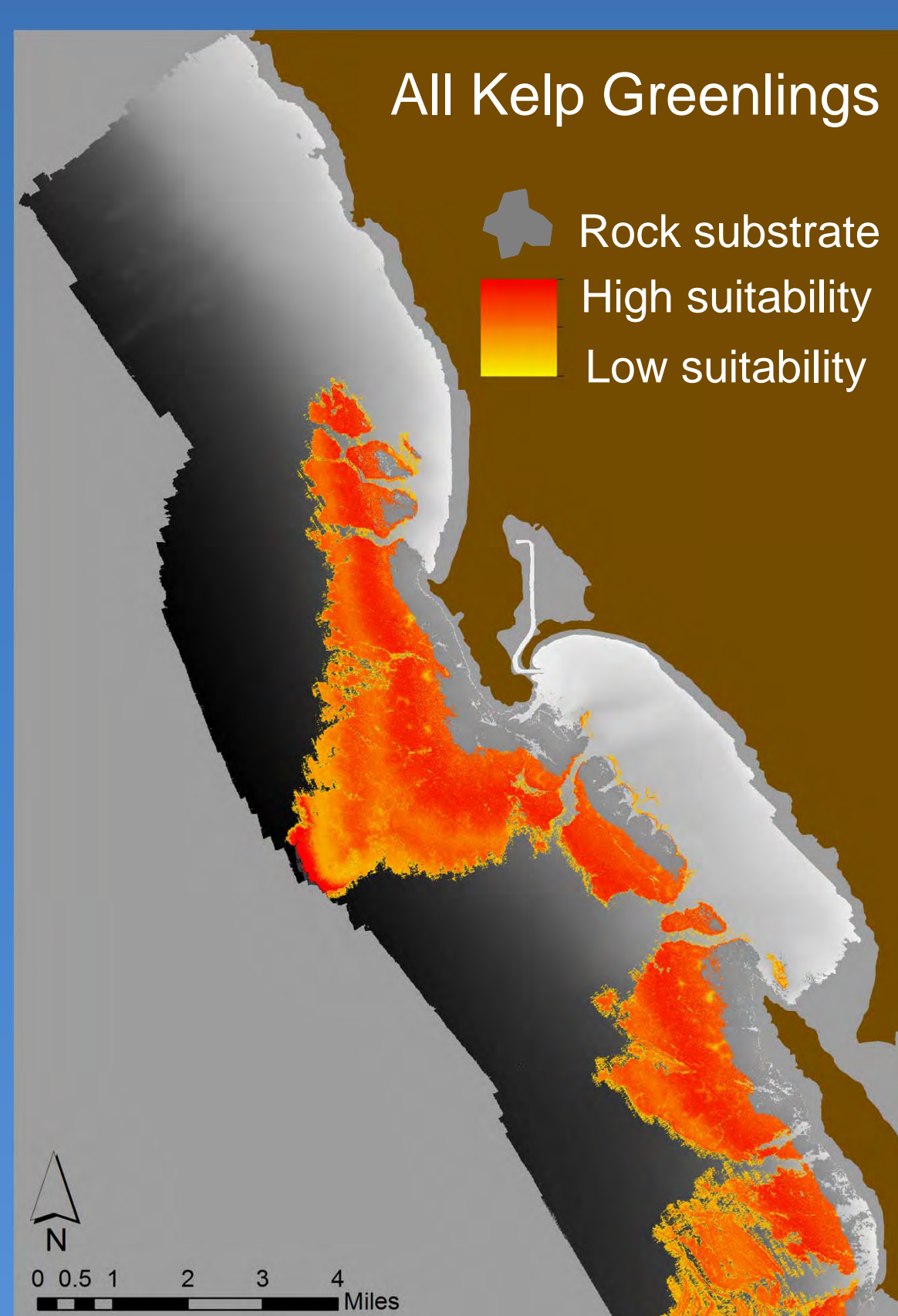
Male Kelp Greenling Presence

$$\begin{aligned}
 \text{All Kelp Greenling Presence} &= \text{Depth}^{**} + \text{Curvature} + \text{Vector Ruggedness Measure}^{**} + \text{Distance to Interface}^{*} + \text{Slope} \\
 \text{Female Kelp Greenling Presence} &= \text{Depth} + \text{Curvature} + \text{Vector Ruggedness Measure} + \text{Distance to Interface} + \text{Slope}^{**} \\
 \text{Male Kelp Greenling Presence} &= \text{Depth} + \text{Curvature} + \text{Vector Ruggedness Measure}^{**} + \text{Distance to Interface} + \text{Slope}
 \end{aligned}$$

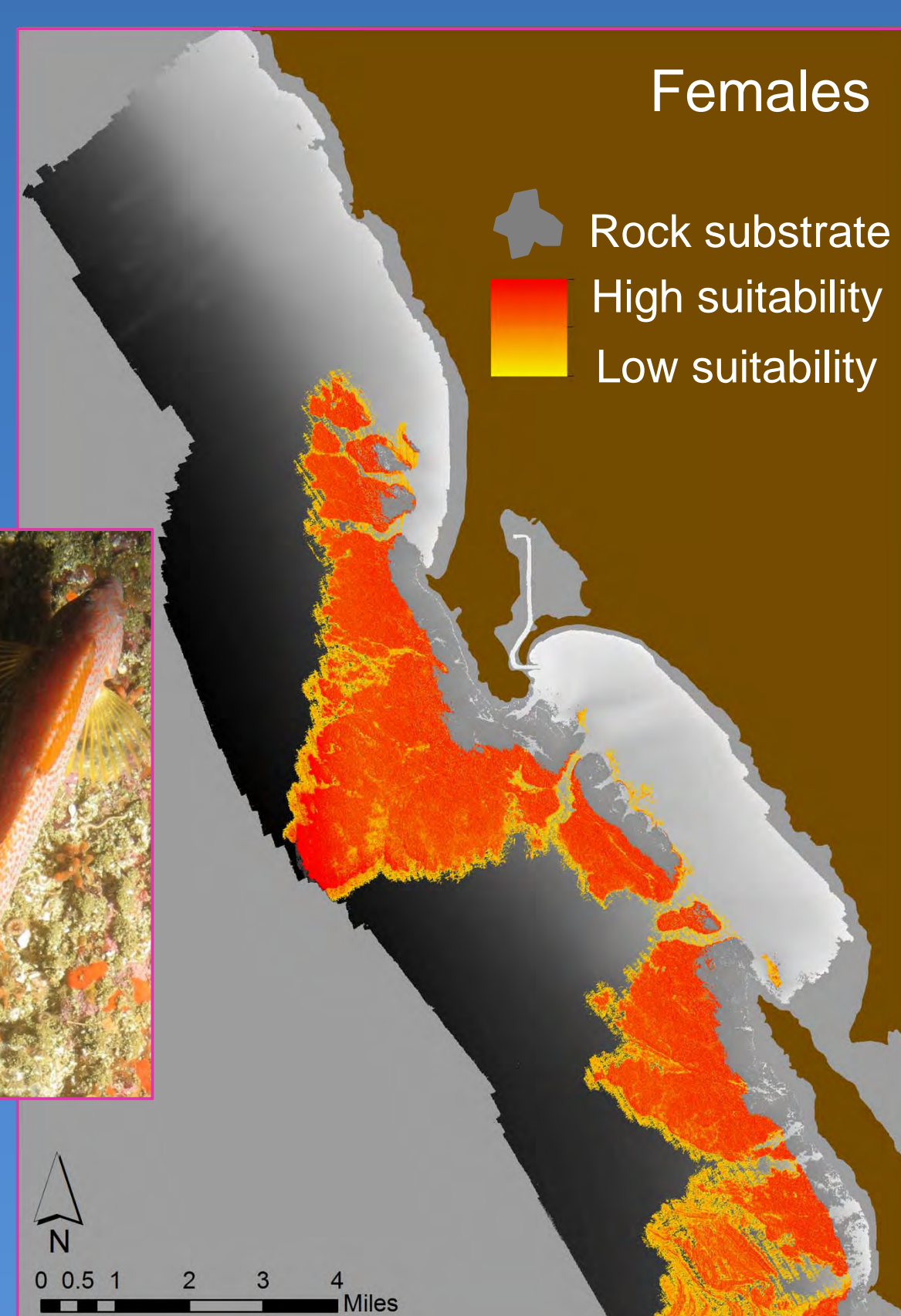
## Application of fine- and large-scale habitat associations can be used to find areas of suitable habitat using predictive modelling techniques.

Using the best fit models, MGET highlighted areas of statistically significant Kelp Greenling habitat. Predictive modelling confirms Kelp Greenlings are more likely found in rocky areas with little change in slope than deeper, sandy habitats.

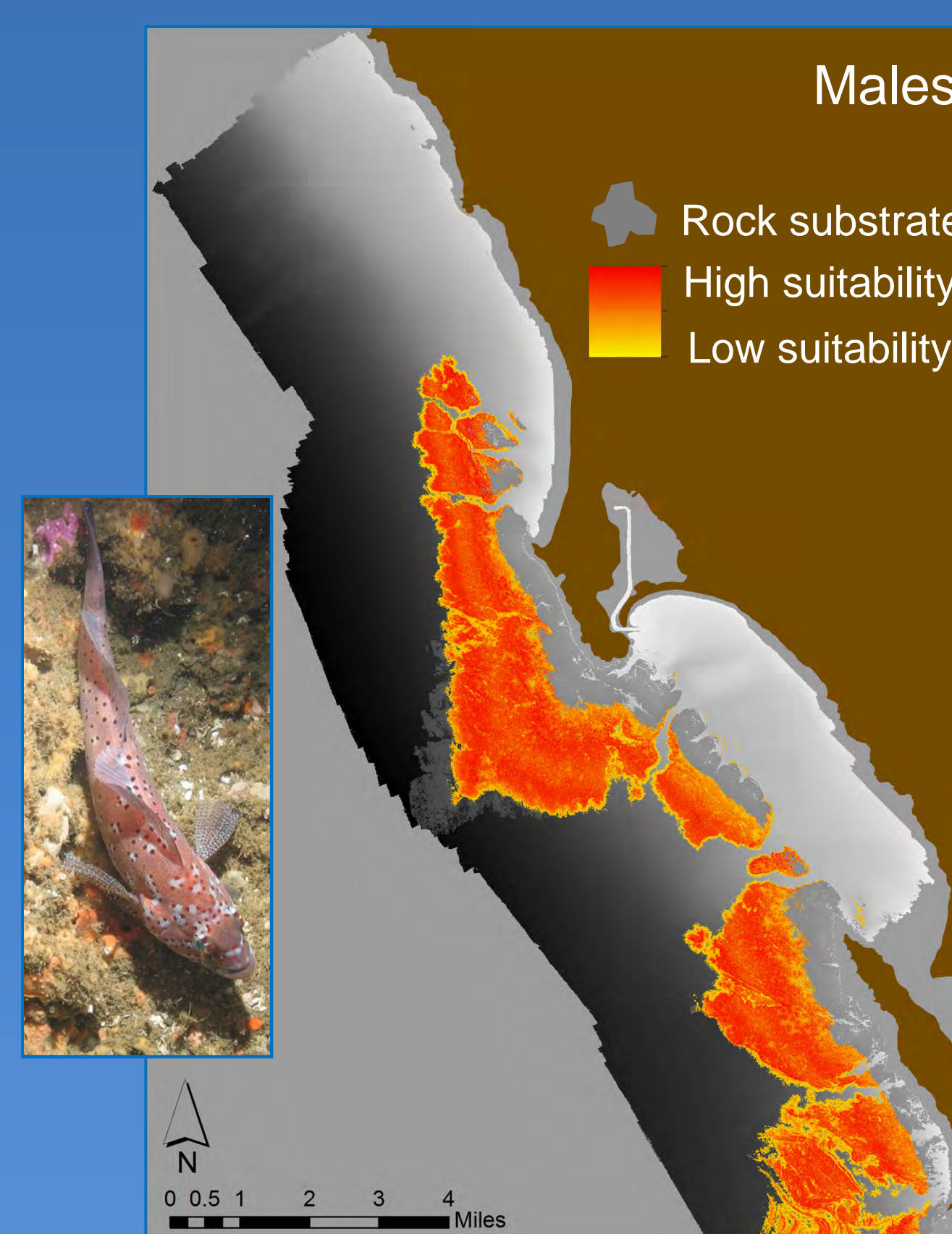
To test model strength, the Bodega Head models will be applied to 4 other study sites.



Kelp Greenlings associate with shallower, low relief rocky substrate.



Females broadly associate with low relief rocky substrate but also venture into soft, sandy areas.



Males have stronger associations with shallower, low relief rocky substrate than females.

